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National Nonprofit Organizations That Inspire and Enable Invention and Invention-based Enterprises

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Introduction

Economics literature makes quite clear that national economic growth is very much a function of inventive and innovative activities and that these activities, in turn, depend on a variety of institutional factors such as the distribution of workforce skills and creativity, rates of entrepreneurship, openness to cooperation, incentives for taking risks, the level and nature of public research and development (R&D) investment, and opportunities for serendipity.²

One dimension of a nation's institutional infrastructure is its array of nonprofit organizations with a mission to inspire and enable invention and invention-based enterprises. This paper provides an inventory of such organizations in the United States, with several uses in mind. First, it aims to be a reference document for use by policymakers, funders, program managers, and academic researchers. Second, it offers initial assessments of the state of the field and identifies opportunities for enhancing it.

Criteria for an organization's inclusion in the paper are that it be:

- nonprofit,
- nationwide in scope, and
- offer programs that inspire and enable inventors and invention-based enterprises.³

The paper provides information on 59 organizations, distributed across six categories.⁴ First, findings for each category are summarized, then a detailed profile is provided for each organization, by category, in the appendix. The paper's organization by category follows.

¹ The author is research professor at the George Washington Institute of Public Policy. This paper is the public version of one delivered under contract to the Lemelson Foundation of Portland, Oregon for its internal use. The foundation's mission is to support inventors and invention-based enterprises in the U.S. and developing nations. The content of the paper is entirely the author's responsibility.

² Andrew Reamer, "The Impacts of Technological Invention on Economic Growth – A Review of the Literature," February 28, 2014. That paper defines the terms "invention," "innovation," and "technology."

³ Also included are two federal organizations that behave similarly to nonprofits and one international association co-founded by a U.S. nonprofit.

⁴ One organization is listed in two categories.

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Profile information is taken from organization websites. Coverage typically includes tagline, mission, annual revenue, year founded, ruling year (year nonprofit status granted by IRS), and invention-related program activities. Information on membership and history is provided when appropriate and available.

The listing is not considered exhaustive—it is very likely that other efforts could be found and added. At the same time, as a significant amount of time was put into seeking out invention-supporting national nonprofits, it is believed that the major invention-supporting programs are represented in this listing.

Observations

A review of the listing of invention-supporting organizations yields observations in three categories particularly relevant to building the nation’s inventive capacity.

- Young Inventor Encouragement. A large number of organizations have a mission of encouraging young inventors. However, there is no mechanism for encouraging coordination and collaboration across these organizations. Consequently, their resources may not be used in the most strategic and effective manner and there may be redundancies and gaps in coverage. The opportunity exists for convening a National Forum on Youth Invention to provide a platform for coordination, collaboration, and field-wide strategic planning.
- Independent Inventor Encouragement. The reverse situation exists with regard to independent inventors. While, it appears, the U.S. once had two robust nationwide membership associations of independent inventors, it also appears that both are largely inactive at present. The U.S. Patent and Trademark Office seems to be the only nationwide organization that regularly provides support and technical assistance to independent inventors. The opportunity exists for catalyzing the

emergence of a strong membership-based organization working on behalf of independent inventors.

- Invention Development and Commercialization: Organizations that promote invention development at U.S. universities and industry and the creation of invention-driven enterprises have existed for several decades. In recent years, a number of prize-based efforts have been created as the notion of encouraging invention through competitive challenges has become popular. In addition, several new programs facilitate the development of relationships between inventing and commercializing organizations. However, as with organizations that support young inventors, a mechanism does not exist to facilitate coordination and collaboration among the various organizations that encourage invention development and commercialization. Working in concert, these organizations have the potential to effectively stimulate commercially successful U.S.-based invention. Consequently, the opportunity exists for convening a National Forum on Invention and Commercialization to provide a platform for coordination, collaboration, and field-wide strategic planning.

National Nonprofit Organizations That Inspire and Enable Invention and Invention-based Enterprises

I. Young Inventor Encouragement

Twenty-seven nonprofit organizations are identified as having the mission, in whole or in part, of encouraging inventors in educational institutions between kindergarten and graduate school. (See table.)

Observations:

- The large majority of efforts to encourage young inventors began in 1990 or later. This pattern suggests that an understanding of the importance of creating an invention culture among the young is a relatively recent phenomenon.
- Sponsored activities are diverse and include competitions, camps, conferences, awards, training and technical assistance to students and teachers, grants to students and teachers, and educational venues.

Young Inventor Encouragement Programs

Program	Elementary School	Middle School	High School	College and University
Project Lead the Way	✓	✓	✓	
Technology Student Association	✓	✓	✓	
National Collegiate Inventors and Innovators Alliance				✓
Invent Now, Inc.	✓			✓
Society for Science and the Public		✓	✓	✓
National Academy of Engineering				✓
Lemelson-MIT Program			✓	✓
National Science Teachers Association	✓	✓		
Siemens Foundation	✓	✓	✓	✓
Academy of Applied Science	✓	✓	✓	
Science Olympiad	✓	✓	✓	
Mathematics Engineering Science Achievement USA		✓	✓	
Conrad Foundation		✓	✓	✓
InventionX		✓	✓	
National Museum of Education in Partnership for America's Future	✓	✓	✓	✓
Edison Innovation Foundation	✓	✓	✓	
The Startup Experience				✓
Christopher Columbus Fellowship Foundation		✓	✓	
Invention Foundation	✓	✓		
Center for Excellence in Education			✓	
Biotechnology Institute			✓	
FIRST	✓	✓	✓	
Robotics Education and Competition Foundation	✓	✓	✓	✓
CREATE Foundation	✓	✓	✓	✓
BEST Robotics		✓	✓	
KISS Institute for Practical Robotics		✓	✓	
National Association of Secondary School Principals		✓	✓	

II. Independent Inventor Encouragement

The U.S. is home to a multitude of [regional and state clubs and associations](#) that encourage and support independent inventors. At present, however, a robust nationwide association for such inventors does not exist. The U.S. once had two such organizations—the [United Inventors Association](#) (UIA) and the [National Congress of Inventor Organizations](#) (NCIO)—but both appear to be moribund at present.

At present, the U.S. Patent and Trademark Office appears to be the only nationwide organization that regularly provides support and technical assistance to independent inventors. For the purposes of this review, of particular interest are the annual national and periodic regional [independent inventor conferences](#) organized by the USPTO.⁵ Up to 2008, the national and regional conferences were co-sponsored by the National Inventors Hall of Fame Foundation.⁶ In 2011 and 2012, several regional conferences were co-sponsored by Invent Now, the nonprofit parent of the Hall of Fame, but that relationship appears to have ended by 2013.

⁵ In 2013, a regional independent inventors conference was held in Kansas. The national event was cancelled due to the federal government shutdown in October 2013.

⁶ According to [Wikipedia](#), the National Inventors Hall of Fame had financial difficulties and relocated its facilities to the USPTO campus in Alexandria, Virginia (where it began in 1973); the Hall of Fame is now an operating unit of the nonprofit Invent Now and receives support from the USPTO.

III. Invention Development and Commercialization

The U.S. has an array of organizations with a mission to promote invention development and commercialization. (See table.)

Substantial diversity exists among these organizations in terms of:

- relative emphasis on invention and commercialization;
- constituencies, which may include universities, federal laboratories, pre-development and startup businesses, and/or large established businesses; and
- mechanisms, which may include competitions, prizes, training, technical assistance, exhibitions, relationship development, peer networks, advocacy, and on-line resources.

Organizations Focused on Invention Development and Commercialization

Organization	Invention	Commercialization
University-Industry Demonstration Partnership	✓	
National Council of University Research Administrators	✓	
XPrize Foundation	✓	
Institute of Competition Sciences	✓	
Challenge.gov	✓	
Office of the Chief Technologist, NASA	✓	
Innovation Engineering Institute	✓	
Industrial Research Institute	✓	✓
TechConnect		✓
Technology Ventures Corporation		✓
The Cleantech Open		✓
iBridge Network		✓
Federal Laboratory Consortium for Technology Transfer		✓
Association of University Technology Managers		✓
Alliance of Technology Transfer Professionals		✓
Licensing Executives Society		✓
National Business Incubator Association		✓
Technology Councils of North America	✓	✓
Association of Technology Commercialization		✓

IV. Inventor Recognition

Four organizations with the primary mission of recognizing inventor achievement have been identified:

- National Academy of Inventors
- National Inventors Hall of Fame
- National Science & Technology Medals Foundation
- Christopher Columbus Fellowship Foundation

V. Intellectual Property

Five organizations focused on intellectual property rights, law, and practice have been identified:

- Intellectual Property Owners Association
- Intellectual Property Owners Educational Foundation
- National Association of Patent Practitioners
- American Intellectual Property Law Association
- International Intellectual Property Institute

VI. Public Policy

Three organizations focused on invention-related public policy have been identified:

- The Alliance for Science and Technology Research in America
- Board on Science, Technology, and Economic Policy, National Academies of Science
- Information Technology & Innovation Foundation

Profiles: National Nonprofit Organizations That Inspire and Enable Invention and Invention-based Enterprises

I. Encouraging Young Inventors

1) Project Lead the Way

Tagline: Preparing students for the global economy

Mission: Address the country's need for more leaders in Science, Technology, Engineering and Mathematics (STEM) by promoting, developing, and encouraging STEM-related courses of study for schools, universities, teachers, and students, including the development of curricula, instructional and related materials.

Legal Status: 501(c)3 corporation

Revenue: \$16.8 million in fiscal year 2012

Location: Indianapolis, Indiana

Founded: 1999

Ruling Year: 2000

History: "In 1986, Richard Blais, chairman of the technology department in the Shenendehowa Central School District in Upstate New York, began offering pre-engineering and digital electronics classes to encourage students to study engineering. He developed a rigorous, relevant curriculum and paired it with a dynamic, interactive learning environment to produce more successful, confident and interested students. Based on the success of these classes, Blais partnered with Richard Liebich, whose family founded the Charitable Leadership Foundation (CLF), to establish PLTW. In 1997, PLTW launched its "Pathway To Engineering" program in 12 New York State high schools. Over the next few years, a partnership with the High Schools That Work initiative of the Southern Regional Education Board (SREB) brought PLTW programs to an additional 30 states."

Activities: "PLTW's hands-on, Activities-, Project-, Problem-Based (APPB) comprehensive curriculum is aligned with relevant national standards and is collaboratively developed and updated by subject matter experts – including teachers, university educators, engineering and biomedical professionals, and school administrators. PLTW's programs emphasize critical thinking, creativity, innovation and real-world problem solving. The hands-on learning engages students on multiple levels, exposes them to areas of study that they may not otherwise pursue, and provides them with a foundation and proven path to post-secondary training and career success in STEM-related fields." Programs include:

- Grades K-5: [PLTW Launch](#)

- Grades 6-8: [Gateway To Technology](#)
- Grades 9-12: [Pathway To Engineering](#) and [Biomedical Sciences](#)

“More than 4,700 schools in all 50 states and the District of Columbia are offering PLTW courses to their students. More than 10,500 teachers and 8,000 high school counselors have undergone advanced training with PLTW.”

2) [Technology Student Association](#)

Tagline: Learning to Live in a Technical World

Mission: Foster personal growth, leadership, and opportunities in technology, innovation, design, and engineering.

Membership: TSA's membership includes over 190,000 middle and high school students in over 2,000 schools spanning 49 states.

Legal Status: 501(c)3 corporation

Revenue: \$1.3 million in fiscal year 2012

Location: Reston, Virginia

Founded: 1978

Ruling Year: 1980

History: From 1958 to 1978, the American Industrial Arts Student Association (AIASA) was a sponsored activity of the American Industrial Arts Association (AIAA). In 1978, the nonprofit corporation, AIASA, Inc., was formed to oversee AIASA as a separate organization. AIASA became the Technology Student Association (TSA) in 1988. Over 2 million students have participated in the organization's programs since 1978.

Activities: TSA organizes an annual [national conference](#), attended by over 5,000 people (approved by [NASSP](#)). It also has [state affiliates](#) that operate annual conferences. Numerous competitions are held at each conference:

- Grades 4-8: The [Junior Solar Sprint](#), sponsored by the U.S. Army Educational Outreach Program, engages youth in designing, building and racing model solar cars. TSA plans to have state and national competitions in the future.
- Grades 6-12:
 - [TEAMS](#) (Tests of Engineering Aptitude, Mathematics and Science) is an annual competition for middle and high school students to apply math and science knowledge in practical, creative ways to solve real-world engineering challenges. The annual challenge theme is selected from the National Academy of Engineering's [Grand Challenges](#). The highest ranking state teams at each level are invited (at their own expense) to compete for top honors at the national TSA conference. (Approved by [NASSP](#).)
 - The [VEX Robotics Competition](#), organized in partnership with the Robotics Education and Competition Foundation and sponsored by VEX Robotics, Inc., challenges middle school and high school students to build innovative robots designed to score the most points possible in qualification matches,

elimination matches and skills challenges. The Competition holds [events](#) throughout the year.

- The [Verizon Innovative App Challenge](#) asks middle school and high school students to create a mobile app concept that meets the needs of their school or community.
- Grades 6-9: TSA sponsors [31 distinct competitions](#) for middle school students.
- Grades 9-12: TSA sponsors [34 distinct competitions](#) for high school students.

3) [National Collegiate Inventors and Innovators Alliance](#)

Tagline: Funding and training student and faculty technology innovators

Mission: Support technology innovation and entrepreneurship in higher education to create experiential learning opportunities for students and successful, socially beneficial innovations and businesses.

Legal Status: 501(c)3 corporation

Membership: Nearly 200 U.S. colleges and universities

Revenue: \$4.7 million in 2012

Location: Hadley, Massachusetts (near Springfield)

Founded: 1996

Ruling Year: 2007

Activities:

- University: The NCIIA annually assists over 5,000 student and faculty innovators and entrepreneurs in bringing their concepts to commercialization. The NCIIA:
 - provides [student start-ups](#) with early stage funding, assistance in business strategy development, and mentoring.
 - co-sponsors a [University Fellows Program](#) (60 students in 56 schools) to promote campus activities that encourage invention and innovation.
 - gives [faculty with funding for courses and programs](#) in tech entrepreneurship, opportunities for recognition, and entrepreneurship education training and networking;
 - co-manages, with Stanford University, the [National Center for Engineering Pathways to Innovation](#), which “develops new programmatic opportunities to offer faculty and students engaging ways to support entrepreneurship and innovation learning in undergraduate engineering education”;
 - holds an [annual two-day conference](#) on technology entrepreneurship in higher education;
 - says its work has led to the launch of 180 new ventures.

4) [Invent Now, Inc](#)

Tagline: Fostering the inventive spirit in all of us

Mission: Be a catalyst for change through recognizing inventors and invention, promoting creativity, and advancing the spirit of innovation and entrepreneurship.

Legal Status: 501(c)3 corporation

Revenue: \$19.0 million in 2012

Location: North Canton, Ohio (south of Akron)

Founded: 1973, as the National Inventors Hall of Fame

Ruling Year: 1988

Activities:

- Grades 1-6: One-week summer [Camp Invention](#) (in 49 states) and an after-school [Club Invention](#) “that engages children to discover their own innate creativity and inventiveness through hands-on science, technology, engineering, and mathematics (STEM) content.” Since 1990, Camp Invention “has served over 723,000 children and 71,000 teachers and leadership interns.” “Club Invention has impacted over 69,000 children and 3,600 teachers.”
- Postsecondary: Founded in 1990, the [Collegiate Inventors Competition](#) gives “college students the opportunity to showcase their ground-breaking scientific innovations. The Competition is marketed to faculty and students at over 2,000 colleges and universities and awards over \$100,000 in prizes annually to undergraduate and graduate students and their advisors.”

5) [Society for Science and the Public](#)

Tagline: Inform, educate, inspire

Mission: To promote public understanding of science.

Legal Status: 501(c)3 corporation

Revenue: \$12.0 million in 2012

Location: Washington, DC

Founded: 1921

Ruling Year: 1922

Activities:

- Grades 6-8: [Broadcom MASTERS](#) (Math, Applied Science, Technology, and Engineering for Rising Stars) is a national competition for 6th- 8th grade students. To qualify, students must place within the top 10% in a SSP-affiliated science fair; nominees then enter the competition by completing an application explaining their science project and demonstrating their use of STEM principles. (Approved by [NASSP](#).)
- Grades 9-12: The [Intel International Science and Engineering Fair](#) (Intel ISEF) provides an annual forum for approximately 1,600 high school students from more than 70 countries, regions, and territories to showcase their independent research as they compete for more than \$4 million annually. The first national fair was in 1950, the first international fair in 1958. (Approved by [NASSP](#).)
- Grade 12: The [Intel Science Talent Search](#) (Intel STS) is a national stage for the country's young scientists to present original research to nationally recognized professional scientists. Since its founding in 1942, the program has recognized almost 3,000 finalists with \$4 million in scholarships. (Approved by [NASSP](#).)

6) [National Academy of Engineering](#)

Mission: Advance the well-being of the nation by promoting a vibrant engineering profession and marshalling the expertise and insights of eminent engineers to provide independent advice to the federal government on matters involving engineering and technology.

Legal Status: unit of the National Academy of Sciences, a 501(c)3 corporation

Revenue: NA

Location: Washington, D.C.

Founded: 1964

Invention-related Activities:

- Undergraduates: The [NAE Grand Challenge Scholars Program](#) is a university-based curricular and extra-curricular program to prepare engineering students to address the 14 [Grand Challenges for Engineering in the 21st Century](#) identified by the NAE in 2008.
 - [Fourteen schools](#) have approved GCS programs.
 - The five program components include research experience, an interdisciplinary curriculum, entrepreneurship (“preparing students to translate invention to innovation”), global perspective, and service learning.
 - “Duke’s Pratt School of Engineering, The Franklin W. Olin College of Engineering, and the University of Southern California’s Viterbi School of Engineering proposed this new education model to prepare engineers to be world changers. The program was endorsed by the National Academy of Engineering in February 2009.”
 - The number of graduating Grand Challenge Scholars and participating schools has grown each year:
 - 2010 – two schools, 12 graduating scholars
 - 2011 – three schools, 14 graduating scholars
 - 2012 – seven schools, 30 graduating scholars
 - 2013 – nine schools, 58 graduating scholars
 - “Envisioned to initially attract and incent a select cadre of 20-30 students at each school, it is hoped that it will be replicated at many other outstanding engineering programs across the country to yield for the nation a pool of several thousand graduates per year uniquely prepared and motivated to address the most challenging problems facing the world and the nation. Moreover, the program will also serve to pilot innovative educational

approaches that will eventually become the mainstream educational paradigm for all engineering students.”

- “It is anticipated that each participating institution will develop its own specific realization of the five components and that students who complete the program successfully will receive a distinction of Grand Challenge Scholar endorsed by their institution and the National Academy of Engineering.”

7) [Lemelson-MIT Program](#), School of Engineering, Massachusetts Institute of Technology

Tagline: Celebrating innovation, inspiring youth

Mission: Honor, inspire, and encourage great inventors

Legal Status: NA

Revenue: NA (Funded by the Lemelson Foundation)

Location: Cambridge, Massachusetts

Founded: 1994

Relevant Activities:

- High School: [Lemelson-MIT InvenTeams](#) of high school students, teachers, and mentors receive grants up to \$10,000 each to create technological solutions to real-world problems.
- University: The [Lemelson-MIT National Collegiate Student Prize Competition](#) honors promising young inventors at colleges and universities around the U.S. The competition is open to teams of undergraduate students and individual graduate students.
- Awards conference: The Lemelson-MIT Program holds an annual conference, [EurekaFest](#), at which it celebrates youth and adult award winners.

8) [National Science Teachers Association](#)

Mission: Promote excellence and innovation in science teaching and learning for all.

Legal Status: 501(c)3 corporation

Revenue: \$29.0 million in 2011

Location: Arlington, Virginia

Membership: 60,000 science teachers, science supervisors, administrators, scientists, business and industry representatives, and others involved in and committed to science education

Founded: 1944

Ruling Year: 1964

Invention-related Activities:

- Grades K–12: [ExploraVision](#) is a science competition in which “a teacher will sponsor and lead his/her students as they work in groups of 2 – 4 to simulate real research and development.” Founded in 1992. More than 330,000 students have participated. Sponsored by Toshiba and administered by NSTA.
- Grades 3-8: “[America’s Home Energy Education Challenge](#) gives students the chance to learn about energy, develop techniques for reducing energy consumption, and save money in their own homes by reducing household energy use.” Sponsored by the U.S. Department of Energy and administered by NSTA.
- Grades 6-9: Sponsored by the U.S. Army’s Educational Outreach Program, [eCYBERMISSION](#) challenges students to think about real-world applications of STEM by working in teams to identify a problem in their community and use scientific practices or the engineering design process to find a solution. Students compete for state, regional, and national awards, with potential winnings of up to \$8,000 in U.S. Savings Bonds.

9) [Siemens Foundation](#)

Mission: Nurture tomorrow's scientists and engineers

Legal Status: 501(c)3 exempt private foundation

Revenue: \$7.4 million in 2011

Location: Iselin, New Jersey

Founded: NA

Ruling Year: 1999

Invention-Related Activities:

- Grades K-12: The [Siemens We Can Change the World Challenge](#) invites teams from across the country to create sustainable, reproducible environmental improvements in their local communities. To date, more than 80,000 students have participated in the Challenge. There are separate challenges for grades K-5, 6-8, and 9-12.
- Grades 9-12: The [Siemens Competition in Math, Science & Technology](#) gives students an opportunity to achieve national recognition for science research projects that they complete in high school. It is administered by The College Board. There are separate prizes for individuals and teams—the top prize for each is \$100,000. (Approved by [NASSP](#).)

10) [Academy of Applied Science](#)

Tagline: Fueling the Spark of Genius

Mission: Encourage youth interest in science, mathematics, engineering, and technology.

Legal Status: 501(c)3 corporation

Revenue: \$3.3 million in 2011

Location: Concord, New Hampshire

Founded: 1963

Ruling Year: 1969

History: "In March of 1963, The Academy of Applied Science was chartered as a non-profit, tax-exempt, scientific and educational corporation in Massachusetts. Its founders, under the leadership of Dr. Robert H. Rines— inventor, attorney and past president of the Academy—were concerned with the modern problems of technological innovation, its impact upon society, and the plight of the inventor, researcher and entrepreneur in the innovative process. The charter members decided to promote stimulating invention, establishing programs to recognize and reward significant individual and collective technological achievement and to stimulate the interest of youth in the applied sciences and disseminating information and the results of research studies."

Activities:

- Grades K-8: The [Young Inventors' Program](#) helps students develop critical thinking and problem-solving skills by challenging them to invent solutions to everyday solutions. The program encourages exploration and participation by those students who may not "fit the mold" for traditional sciences. A yearly celebration provides participating students a venue to showcase their creativity and compete for awards and recognition. The program reaches over 600 schools and 5,000 students in New Hampshire each year and is being used in Nevada, New York and Massachusetts.
- Grades 9-12:
 - The [Junior Science & Humanities Symposium](#), sponsored by the research offices of the U.S. Department of Defense, provides an opportunity for in science, technology, engineering or mathematics (STEM) to compete for scholarships and recognition on a national level by presenting original research efforts before a panel of judges during the annual symposium. Every year, more than 10,000 students participate in the 48 Regional Symposia held on university campuses across the country and in Alaska,

Puerto Rico and Department of Defense schools in Europe and the Pacific.
(Approved by [NASSP](#).)

- The [Naval Science Awards Program](#) is a program of the U.S. Navy and Marine Corps administered by the Academy of Applied Science. The program encourages high school students to pursue careers in science or engineering by rewarding their scientific achievements through scholarships. The program provides scholarship awards to over 300 local, regional and state science and engineering fairs.

11) [Science Olympiad](#)

Tagline: Exploring the World of Science

Mission: Improve the quality of K-12 science education; increase male, female and minority interest in science; create a technologically literate workforce; and provide recognition for outstanding achievement by both students and teachers.

Legal Status: 501(c)3 corporation

Revenue: \$1.6 million in 2012

Location: Oakbrook Terrace, Illinois

Founded: 1982

Ruling Year: 1985

History: The first annual Science Olympiad National Tournament was hosted by Michigan State University in May, 1985, with 17 states participating. In 2012, there were 6,400 secondary schools from 49 states participating, with an additional 10,000 elementary schools holding Science Olympiad tournaments or hands-on events.

Activities:

- Grades 3-6: The [Elementary Science Olympiad](#) (ESO) program organizes competitions at the state and local level. Schools form a team, register, are assigned events to prepare for, and compete against other teams for medals, ribbons and in some cases, state trophies. There is no ESO National Tournament.
- Grades 6-12: [Science Olympiad](#) competitions are like academic track meets, consisting of a series of [23 team events](#) in each division (Division B is middle school; Division C is high school).
 - Each year, a portion of the events are rotated to reflect the ever-changing nature of genetics, earth science, chemistry, anatomy, physics, geology, mechanical engineering and technology.
 - Each school-based team is allowed to bring 15 students who cross-train for a variety of events in their skill set, but some school clubs and boast more than 75 members, allowing for a rich apprentice and mentoring system for all involved.
 - [Science Olympiad Invitational Tournaments](#) allow Science Olympiad teams to participate in "practice" tournaments that do not impact regional or state advancement or rankings, but are often used as tryouts for team members and to form official teams which do advance.
 - A [State Science Olympiad](#) is held in each state across the nation.

- “The Science Olympiad National Tournament is the pinnacle of achievement for 120 of the country's best Science Olympiad teams, representing more than 2,000 students.” Wright State University was the host to the [2013 Science Olympiad National Tournament](#); the University of Central Florida will host the [2014 Science Olympiad National Tournament](#). (Approved by [NASSP](#).)

12) [Mathematics Engineering Science Achievement USA](#)

Mission: Engage educationally disadvantaged students to excel in math and science and graduate with math-based degrees.

Legal Status: NA

Revenue: NA (The Lemelson Foundation supports the MESA National Engineering Design Competition)

Location: NA

Founded: 1970

General Activities: MESA serves students in pre-college through the MESA Schools Program (MSP), community college students through the MESA Community College Program (MCCP), and four-year college level students in the MESA Engineering Program (MEP). MESA is active in 11 states.

Invention-related Activities:

- Grades 6-12: MESA USA sponsors the annual [National Engineering Design Competition](#). MESA Day competitions are held at the state level, which qualify teams for the national competition. The competition's goal is to develop students' skills through "invention education," which emphasizes learning by doing. Students develop innovative solutions to real-world problems ranging from clean power sources to cost-effective limb replacement.

13) [Conrad Foundation](#)

Tagline: Get your genius on

Mission: Provide a forum for students to develop their own innovative concepts to benefit a specific area in the fields of science, technology, engineering, and math, and to support the students in their efforts to commercialize their products.

Legal Status: 501(c)3 corporation

Revenue: \$1.0 million in 2011

Location: League City, Texas (Houston metro area)

Founded: 2008, to honor the legacy of Apollo 12 astronaut Charles “Pete” Conrad

Ruling Year: 2008

Activities:

- Grades 7-12 and undergraduate college students: The [DreamUp](#) program “helps accredited schools in the United States design, build and conduct experiments in space on the U.S. National Laboratory aboard the International Space Station (ISS).”
- Grades 9-12: Annual [Spirit of Innovation Challenge](#), in which high school teams use science, technology, engineering and math skills to “develop innovative products to help solve global and local problems while supporting global sustainability.” Finalists meet at annual [Innovation Summit](#) at NASA’s Johnson Space Center in Houston.

14) [InventionX](#) (aka Invention Experience)

Tagline: Innovative education through invention and entrepreneurship

Mission: Motivate under-served middle and high school students about science, technology, engineering, and math through museum-based invention events and challenges.

Managers: Cleantech Open and Instituting Science in Schools

Legal Status: NA

Revenue: NA (Funded in part by the Lemelson Foundation)

Location: NA

Founded: 2012⁷

Relevant Activities:

- Grades 6-12:
 - Museum-based Invention Challenge: “We employ game mechanics and hands-on activities to engage students in science and technology content through our Invention Challenge process. Working directly with museums, we use Design Challenge Learning to create interactive experiences both offline and online.”
 - InventionX Ambassadors: “[S]tudents just like you . . . will be helping other invention-minded students engage in other competitions through our online forums, contests, social media, and blogs.”

⁷ Started by Joshua Neubert, who also runs the Night Rover Challenge, helped create the Conrad Foundation, and worked for the X Prize Foundation.

15) [National Museum of Education in Partnership for America's Future](#)

Mission: To archive, enshrine, and celebrate the positive efforts of American education.

Legal Status: 501(c)3 corporation

Revenue: \$86,000 in 2011

Location: Akron, Ohio

Founded: 1990

Ruling Year: 1991

Activities: NMOE operates a series of programs on behalf of students Grades K-12 and College:

- [Student Ideas for a Better America Invention Competition](#) and [other invention competitions](#).
- [National Gallery for America's Young Inventors](#), "a museum of young American inventors whose ideas hold promise to a positive impact on our society. Its purpose is to preserve and promote great inventions produced by America's youth."
- [Inventucation™ Technique Training](#) "to teachers to view their existing curriculum in a new and innovative way."

16) [Edison Innovation Foundation](#)

Tagline: Looking to encourage innovation through the ages

Mission: Encourages students (including women and minorities) to embrace careers in science, technology, and engineering and is committed to educating the next generation of great innovators while using Edison and his Invention Factory as the foundation.

Legal Status: 501(c)3 corporation

Revenue: \$1.0 million in 2012

Location: Newark, New Jersey

Founded: 1996, at the request of the National Park Service to provide support to the Thomas Edison National Historical Park and other Edison-related parks and sites throughout the U.S.

Ruling Year: 1996

Invention-related Activities: For Grades K-12, efforts include:

- FemGineers, girl students interested in engineering and design;
- Edison Invention notebook for student inventors;
- support for the National Museum of Education (Akron, Ohio) and its National Gallery for America's Young Inventors and Inventucation Program (see above);
- Development of educational center and resources at the T. Edison National Historical Park, including Edison's Invention Factory; and
- the Thomas Edison Invention Challenge design contest for middle/high school students (New Jersey only).

17) [The Startup Experience](#)

Tagline: Fostering innovation & social entrepreneurship

Mission: Change the world by inspiring and training a new generation of entrepreneurial-minded young people to have the confidence and the skills to solve big problems

Legal Status: NA

Revenue: NA

Location: San Francisco, California

Founded: 2012

Activities:

- College: “The Startup Experience jumpstarts the entrepreneurial spirit on campus and builds momentum for other entrepreneurial initiatives. It provides new opportunities for departments to jointly give students a chance to work across disciplines, tackle relevant challenges, and learn new skills to help them navigate the course and their college experience. Educational institutions have used the Startup Experience in several ways:
 - Use the workshop to kick off a business/social venture plan competition.
 - Host the workshop as an initial team building activity for business and innovation majors to serve as the “initiation” activity for students.
 - Include the Startup Experience in freshman orientation as an introduction to entrepreneurship on campus.

The Startup Experience helps passionate, young entrepreneurs take their ideas to the next level, while having a lasting impact on their educational and professional development.

Participants in the Startup Experience learn the skills of an entrepreneur:

- The entrepreneurial mindset
- Opportunity identification and evaluation
- Design thinking
- Business model innovation
- Rapid prototyping
- Collaboration and teamwork
- Leadership
- Presentation skills

The Startup Experience is now running workshops in Denmark, Ireland, Malaysia, India, Turkey, Jordan, Tunisia, Mexico, Egypt, Argentina, Kenya, Colombia and the U.S. in collaboration with leading universities, governments, NGOs and corporate sponsors.”

18) [Christopher Columbus Fellowship Foundation](#)

Mission: Encourage and support research, study, and labor designed to produce new discoveries in all fields of endeavor for the benefit of mankind.

Legal Status: Federal agency

Revenue: under \$1 million annually, from congressional appropriations and donations

Location: Auburn, New York

Founded: 1992

History: In 1992, Congress passed Public Law 102-281 creating the Christopher Columbus Quincentenary Coins and Fellowship Foundation. The initial funding for the Foundation came from the sale of three denominations of specially minted coins sold by the United States Mint from August 1992-June 1993. Congress has provided an annual appropriation since. [Several congressional and Administration efforts](#) to eliminate the organization have failed.

Activities: The Foundation operates a series of scientific awards competitions for adults and students. Those for students are described below:

- Grades 6-8: “The [Christopher Columbus Awards](#) is a national, community-based science, technology, engineering and math (STEM) program for middle school students. The program challenges the students to work in teams of three to four, with an adult coach, to identify a problem in their community and apply the scientific method to create an innovative solution to that problem. Of eight finalist teams, two will receive a \$2,000 scholarship for each member and one will get the \$25,000 Columbus Foundation Community Grant “to help bring the students' idea to life in their community.” (Approved by [NASSP](#))
- Grades 9-12:
 - In conjunction with the American Farm Bureau Federation, the foundation annually presents two \$1,000 [Agriscience Student Awards](#) “to current secondary school students who are making or have recently made a significant and positive contribution related to the field of agriscience.”
 - In partnership with the U.S. Chamber of Commerce, the foundation annually presents two \$1,000 [Life Sciences Student Awards](#) “to current secondary school students who are making or have recently made significant and positive contributions related to the study of Biology, Chemistry and other life sciences courses.”

19) [Invention Foundation](#)

Mission: Supports the development of creativity and innovation, particularly for underserved students and teachers, through dynamic educational opportunities.

Legal Status: 501(c)3

Revenue: NA

Location: Wilmington, Delaware

Founded: 2012 by John and Jill Gartman

Ruling Year: 2013

Relevant Activities: In development. Initial efforts have focused on Grades K-8. While initial programs (an invention challenge, honor awards) are focused on San Diego, California, the foundation's aspiration is nationwide. No news has been posted on the website since March 2013.

20) [Center for Excellence in Education](#)

Mission: To nurture high school and university scholars to careers of excellence and leadership in science, technology engineering and mathematics (STEM), and to encourage international collaboration between and among leaders in the global community.

Legal Status: 501(c)3

Revenue: \$2.4 million in 2011

Location: McLean, Virginia

Founded: 1983

Ruling Year: 1983

History: “The Center for Excellence in Education (CEE) was founded in 1983 by the late Admiral H. G. Rickover, Father of the nuclear navy and of civilian uses of nuclear power, and Joann P. DiGennaro, CEE’s President. They recognized that nurturing careers of excellence and leadership in science and technology in young scholars was an essential investment in the United States national and global future.”

Activities: CEE operates two programs for Grades 9-12:

- The [USA Biology Olympiad \(USABO\)](#) is “the premiere biology competition for high school students in the United States” Annual participation is 10,000 students. “After two rounds of challenging exams, twenty Finalists are invited to a residential training program where they learn advanced biological concepts and exacting lab skills at Purdue University, the Home of the USABO National Finals. . . . Finalists take a three-hour theoretical exam and six- hour practical exam Ultimately, four students earn the right to represent the USA at the International Biology Olympiad (IBO), a worldwide competition involving student teams from over sixty countries. . . .”
- The [Research Science Institute](#) is a summer program at MIT for “80 of the world's most accomplished high school students RSI scholars first participate in a week of intensive STEM classes with accomplished professors. The heart of RSI is the five week research internship where students conduct individual projects under the tutelage of mentors who are experienced scientists and researchers. During the final week of RSI, students prepare written and oral presentations on their research projects.”

21) [Biotechnology Institute](#)

Mission: Engage, excite, and educate young people about careers in biotechnology and their potential to heal the sick, feed the hungry, restore the environment, and fuel the economy.

Legal Status: 501(c)3 corporation

Revenue: \$1.2 million in 2011

Location: Washington, D.C.

Founded: 1998

Ruling Year: 2003

History: Founded by the Biotechnology Industry Organization (BIO)

Activities:

- Grades 9-12: The Biotechnology Institute manages the annual [BioGENEius Challenge](#), which “provides high school students the opportunity to compete and be recognized for outstanding research in biotechnology. . . .” Initial competitions are local; 35 local winners compete at the U.S. National BioGENEius Challenge; ten U.S. finalists and two Canadian finalists compete in the International BioGENEius Challenge.

22) [FIRST](#) (U.S. Foundation for Inspiration and Recognition in Science and Technology)

Tagline: For Inspiration and Recognition of Science and Technology

Mission: Inspire young people to be science and technology leaders, by engaging them in exciting mentor-based programs that build science, engineering and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication, and leadership.

Legal Status: 501(c)3 corporation

Revenue: \$51 million in fiscal year 2013

Location: Manchester, New Hampshire

Founded: 1989

Ruling Year: 1995

History: Founded by Dean Kamen, an inventor, entrepreneur, and advocate for science and technology.

Activities:

- Grades K-12: [FIRST Place](#) “is an innovative and creative learning and development space designed to offer discovery and exploration of science, math, and technology in an energetic environment. . . . [The] facility has a reconfigurable “working laboratory” designed to change according to the class or workshop. FIRST Place currently offers FIRST Robotics summer camps, customized school visits, and hosts many science and technology related events.”
- Competitions:
 - Grades K-3: [Junior FIRST LEGO League](#) “is a hands-on program designed to capture young children's inherent curiosity and direct it toward discovering the possibilities of improving the world around them. . . . [T]his program features a real-world challenge, to be solved by research, critical thinking and imagination. . . . [S]tudents work with LEGO elements and moving parts to build ideas and concepts and present them for review.”
 - Grades 4-8: [FIRST LEGO League](#) “introduces younger students to real-world engineering challenges by building LEGO-based robots to complete tasks on a thematic playing surface.”
 - Grades 7-12: The [FIRST Tech Challenge](#) “is designed for students in grades 7-12 to compete head to head, using a sports model. Teams are responsible for designing, building, and programming their robots to compete in an alliance

format against other teams. The robot kit is reusable from year-to-year and is programmed using a variety of languages. Teams . . . are required to develop strategy and build robots based on sound engineering principles. Awards are given for the competition as well as for community outreach, design, and other real-world accomplishments.” (Approved by [NASSP](#).)

- [Grades 9-12](#): The [FIRST Robotics Competition](#) “combines the excitement of sport with the rigors of science and technology. Under strict rules, limited resources, and time limits, teams of 25 students or more are challenged to raise funds, design a team ‘brand,’ hone teamwork skills, and build and program robots to perform prescribed tasks against a field of competitors.” This year, 45,225 high-school students on 1,809 teams from 12 countries competed in the FIRST Robotics Competition. (Approved by [NASSP](#).)
- [FIRST Scholarship Program](#): “Many colleges and universities, professional associations, and corporations offer college scholarships to high school students on *FIRST* teams. This is official recognition of the knowledge and technical and life skills these students have gained from participating in a *FIRST* competition. For 2014, FIRST has 150 confirmed scholarship providers that are making available almost 900 individual scholarship opportunities with a total value of more than \$18,000,000.”

23) [Robotics Education and Competition Foundation](#)

Tagline: Inspiring students, one robot at a time.

Mission: Increase student interest and involvement in science, technology, engineering and mathematics (STEM) by engaging students in hands-on sustainable and affordable curriculum-based robotics engineering programs across the U.S. and internationally.

Legal Status: 501(c)3 corporation

Revenue: \$2.7 million in fiscal year 2012

Location: Rockwall, Texas

Founded: 2006

Ruling Year: 2007

Activities: The REC Foundation organizes a series of student competitions, largely sponsored by [VEX Robotics](#), a subsidiary of Innovation First International, Inc.:

- Elementary and Middle School: In the [VEX IQ Challenge](#), students build a robot using the VEX IQ robotics platform to solve an engineering challenge that is presented in the form of a game.
- Grades 6-12: In the [VEX Robotics Competition](#), managed by the Technology Student Association, students use the VEX Robotics Design System to build innovative robots designed to score the most points possible in qualification matches, elimination matches and skills challenges.
- University Students: In [VEX U](#), students build two innovative robots that work together to score the most points possible in qualification matches, elimination matches and skills challenges.
- Online Challenges (e.g., videos, essays, website, design, construction) sponsored by corporations (VEX, Autodesk, EMC), foundations (Future Foundation), and public agencies (Texas Workforce Commission). Five of eight 2014 challenges are sponsored by VEX Robotics.

The REC Foundation also maintains a [RobotEvents.com](#) website that lists and [maps](#) robot competitions sponsored by it and other organizations (including TSA, CREATE, BEST Robotics, Botball, and Project Lead the Way).

24) [CREATE Foundation](#) (Competitive Robotics Enhancing and Advancing Technology Education)

Mission: To inspire and prepare the youth of today to become the engineers and scientists of tomorrow.

Legal Status: 501(c)3

Revenue: \$85,000 in fiscal year 2012

Location: Omaha, Nebraska

Founded: NA

Ruling Year: 2008

Activities: CREATE hosts an annual [U.S. Open Robotics Championship](#) with four age-specific competitions (Grades K-3, 4-6, 6-8, and 9-12) and the [CREATE Open](#), “an advanced Robotics challenge open to teams of . . . professional engineers and anyone else from middle schools to universities . . .”

25) [BEST Robotics](#)

Tagline: Boosting Engineering, Science, and Technology

Mission: Inspire students to pursue careers in engineering, science, technology, and mathematics through robotics design

Legal Status: 501(c)3 corporation

Revenue: \$198,000 in 2012

Location: Plano, Texas

Founded: 1997

Ruling Year: 1998

Activities:

- Grades 6-12: Each fall, over 18,000 students from over 850 middle and high schools participate in a [nationwide competition](#). It starts with [local competitions](#) in 50 [“hubs”](#) in 19 states. Local winners advance to regional competitions and the regional winners advance to the national competition.

26) [KISS Institute for Practical Robotics](#)

Mission: Use hands-on robotics programs to communicate the excitement, knowledge, and practical understanding of science, technology, engineering, and math.

Legal Status: 501(c)3 corporation

Revenue: \$1.3 million in fiscal year 2012

Location: Norman, Oklahoma

Founded: 1994

Ruling Year: 1994

Activities:

- Grades 6-12: The [Botball Educational Robotics Program](#) “engages middle and high school aged students in a team-oriented robotics competition” Currently, [201 teams](#) in 14 U.S. regions, China, Austria, and Qatar participate at the regional and international level. The International Competition is held at the annual [Global Conference on Educational Robotics](#).

27) [National Association of Secondary School Principals](#)

Mission: Promote excellence in middle level and high school leadership through research-based professional development, resources, and advocacy so that every student can be prepared for postsecondary learning opportunities and be workforce ready.

Legal Status: 501(c)3 association

Revenue: \$20.0 million in FY2012

Membership: 30,000 principals, assistant principals, and other school leaders in middle level and high schools

Location: Reston, Virginia

Founded: 1916

Ruling Year: 1969

Activities:

- Accrediting Student Contests: The NASSP National Committee on Student Contests and Activities maintains an annually updated [National Advisory List of Student Contests and Activities](#) “to provide information to assist principals, teachers, parents, and students in making decisions regarding participation in a wide variety of program opportunities.” The National Advisory List is in its 72nd annual edition.
 - “The National Committee on Student Contests and Activities reviews all programs based on the following standards: Educational value, Financial support, Organizational structure, Promotional accuracy, Fair, appropriate adjudication.” (The full set of NASSP standards is available [here](#).)
 - “Any program that meets the National Advisory List guidelines, as determined by the committee, will be included on the National Advisory List. . . . Approval is valid for one year beginning with the publishing of the list in September and running through the end of August of the following year”
 - The current NASSP list includes 11 programs profiled in this paper. At the same time, the *New York Times* reports on [controversy](#) regarding several NASSP-approved profit-making programs not profiled here.

II. Encouraging Independent Inventors

The U.S. is home to a multitude of [regional and state clubs and associations](#) that encourage and support independent inventors. However, at present, a robust nationwide association for such inventors does not exist. The U.S. once had two such organizations—the [United Inventors Association](#) (UIA) and the [National Congress of Inventor Organizations](#) (NCIO)—but both appear to be moribund at present.

At present, the U.S. Patent and Trademark Office appears to be the only nationwide organization that regularly provides support and technical assistance to independent inventors. For the purposes of this review, of particular interest are the annual national and periodic regional [independent inventor conferences](#) organized by the USPTO.⁸ Up to 2008, the national and regional conferences were co-sponsored by the National Inventors Hall of Fame Foundation.⁹ In 2011 and 2012, several regional conferences were co-sponsored by Invent Now, the nonprofit parent of the Hall of Fame, but that relationship appears to have ended by 2013.

⁸ In 2013, a regional independent inventors conference was held in Kansas. The national event was cancelled due to the federal government shutdown in October 2013.

⁹ According to [Wikipedia](#), the National Inventors Hall of Fame had financial difficulties and relocated its facilities to the USPTO campus in Alexandria, Virginia (where it began in 1973); the Hall of Fame is now an operating unit of the nonprofit Invent Now and receives support from the USPTO.

III. Invention Development and Commercialization

1) University-Industry Demonstration Partnership

Mission: Enhance the value of collaborative partnerships between university and industry in the United States.

Legal Status: A program of the National Academy of Sciences

Revenue: NA

Location: Washington, DC

Founded: 2006

History: Launched by the [Government-University-Industry Research Roundtable](#) to provide a forum for academic and corporate representatives with diverse interests and responsibilities to find better ways to work together.

Membership: about 100 members

Activities: The UIDP has [project process](#) by which it “creates projects in which our members test potential solutions to both operational and strategic issues, resulting in proofs of concept and best practices for U-I collaboration going forward.” At present, it is sponsoring [16 projects](#) on a wide variety of topics such as contract accords, negotiation, startup firms, and clinical trials. Examples of modes include workshops, webinars, handbooks, and direct technical assistance.

2) [National Council of University Research Administrators](#)

Tagline: An organization of individuals involved in the administration of sponsored programs at colleges, universities and teaching hospitals.

Mission: Advance the field of research administration

Legal Status: 501(c)3 corporation

Revenue: \$5.6 million in 2011

Location: Washington, DC

Membership: over 7,000 individuals representing over 400 institutions in 2008

Founded: 1959

Ruling Year: 1991

History: “[A]t a conference on research administration held in Estes Park, Colorado in June 1958, a plan was developed for a clearinghouse for the exchange of information about research administration. In a subsequent meeting in November held at the Cornell Aeronautical Laboratory in Buffalo, a group of eight administrators “agreed that there was a need for some kind of group or organization that would look beyond business and fiscal matters into the broader aspects of research administration” [I]n September 1959 . . . an informal meeting was held by about 25 participants at the 13th National Conference on the Administration of Research (NCAR) at Manchester, Vermont. This meeting determined that a national organization of university research administrators would serve a useful purpose.”

Activities:

- [Educational Programs](#): NCURA hosts several conferences and regional meetings, traveling workshops, online tutorials as well as its own TV site.
- [Collaborate NCURA](#): “The Collaborate NCURA professional networking platform allows members to easily interact and communicate online, empowering members to work effectively.”

3) [XPrize Foundation](#)

Tagline: Making the Impossible Possible

Mission: To bring about radical breakthroughs for the benefits of humanity, thereby inspiring the formation of new industries and the revitalization of markets.

Legal Status: 501(c)3 corporation

Revenue: \$31.3 million in 2011

Location: Playa Vista, California

Founded: 1994

Ruling Year: 1999

Activities: The XPrize Foundation develops and manages prize competitions in which a monetary award given to the first team to achieve a specific goal that has the potential to positively impact humanity. “[A]n XPRIZE incites innovation by tapping into our competitive and entrepreneurial spirit.”

- [Visioneering](#): XPRIZES are developed in five categories: Energy & Environment, Exploration, Global Development, Learning, and Life Sciences. “Each year, corporate leaders, philanthropists, heads of innovation and XPRIZE Trustees (‘visioneers’) gather for a multi-day Visioneering meetup to brainstorm, debate, and prioritize which of the world's Grand Challenges might be solved through incentivized competition.” Each of the winning prize ideas is sponsored.
- [XPrizes](#): Current prizes are sponsored by Google, Nokia, Qualcomm, and the Schmidt Family Foundation. Past prize sponsors include Archon, Northrup Grumman, Ansari, and Progressive Insurance.
- [XPrize Labs](#): XPRIZE Labs has teaching and research activities at Massachusetts Institute of Technology, University of Washington, and the University of Southern California “to educate university students and faculty around the emerging field of prize theory. . . . The goal of XPRIZE Labs is to engage the next generation of leading thinkers in recognizing areas that are ripe for breakthrough innovation.”

4) [Institute of Competition Sciences](#)

Tagline: Creating change through competitions

Mission: Increase the impact of competitions on society through creating a clearinghouse of knowledge on competition-based innovation.

Legal Status:

Revenue: NA

Location: San Francisco, California

Founded: 2012 (as nonprofit affiliate of [Zozude LLC](#), an educational competitions support company)

Ruling Year: NA

History: In October 2012, the founders-to-be of ICS “hosted the Challenge America Summit to gather competition managers and innovation leaders together to discuss common practices and needs in competition-based innovation. The Summit provided the first gathering of its kind for innovation leaders who filled the event. From this event, we found a strong need to expand the program and create a larger, more in-depth Competition Conference. Combining this idea with a broadly expressed need for better research in the field, the Institute of Competition Sciences was born.”

Activities:

- Events: Hosted a [Tech Summit on Incentivizing Collaborative Innovation](#), will host a [Workshop on Creating Competitions with NASA](#), and offers a monthly series of salons.
- Consulting and support services: Help organizations maximize the impact of competitions through expertise in successful structural concepts and strategic design principles.

5) [Challenge.gov](https://www.challenge.gov/), U.S. General Services Administration

Challenge.gov is a collection of challenge and prize competitions, all of which are run by more than 50 agencies across federal government. These include technical, scientific, ideation, and creative competitions where the U.S. government seeks innovative solutions from the public, bringing the best ideas and talent together to solve mission-centric problems.

Challenge.gov is administered by the U.S. General Services Administration (GSA) in partnership with ChallengePost.

Between September 2010 and September 2013, 58 federal agencies ran 288 challenge competitions. This platform is available at no cost to all federal agencies.

6) [Office of the Chief Technologist, NASA](#)

Mission: Serve as the NASA Administrator's principal advisor and advocate on matters concerning agency-wide technology policy and programs; coordinate and track all technology investments across the agency; serve as the NASA technology point of entry and contact with other government agencies, academia and the commercial aerospace community; and develop and execute innovative technology partnerships, technology transfer and commercial activities and the development of collaboration models for NASA.

Legal Status: Federal agency

Revenue: NA

Location: Washington, DC

Invention-related Activities: The NASA OTC regularly sponsors a number of [technology challenges](#), often in cooperation with non-federal organizations. These include:

- [Centennial Challenges](#): “The NASA Centennial Challenges Program was established to conduct prize competitions to stimulate innovation in basic and applied research, technology development, and prototype demonstration that have the potential for application to the performance of the space and aeronautical activities of NASA. Those competing for the NASA monetary prizes can be individuals, independent teams, student groups, research organizations or private companies.” Current challenges include:
 - [Night Rover Challenge](#) (with Cleantech Open): “\$1.5 Million in prize money to support the entrepreneurs who can demonstrate an energy storage system that would allow a lunar rover to operate continuously throughout the entire lunar cycle, including 14 days of sheer darkness.”
 - [Sample Return Robot Challenge](#) (with Worcester Polytechnic Institute): \$1.5 million in prize money for a “demonstration of an autonomous robotic system to locate and collect a set of specific sample types from a large planetary analog area and then return the samples to the starting zone.”
 - [Unmanned Aircraft Systems \(UAS\) Airspace Operations Challenge](#) (with Development Projects Inc.): \$500,000 to develop “technologies that may reduce the technical challenges of safely operating autonomous unmanned aircraft systems in commercial airspace.”
 - [Request for NASA prize competition concepts](#): In December 2014, NASA issued a request for concepts “for the Space Technology Mission Directorate’s Centennial Challenges Program, NASA’s flagship program for technology prize competitions. . . . NASA will provide the monetary prize

purse that is awarded to competition winners. NASA will not provide any funds or cost reimbursement to an Allied Organization for their work on a Challenge. . . . NASA is seeking ideas for technology demonstration competitions that address major issues leading to new aerospace capabilities. Competitions will involve technology development and prototype demonstrations. This NOTICE is for formulation of new prize competitions with prize purses up to \$10M. Solution to the challenge should be achievable within a 10-year time frame and motivate a substantial number of competitors.”

- [NASA Tournament Lab](#) (in cooperation with the Harvard Business School, Harvard’s Institute of Quantitative Social Sciences, and TopCoder): “[A]n online virtual facility for NASA researchers with a computational or complex data processing challenge to post ideas for potential algorithmic or software development challenges. These ideas can then be discussed, refined, and voted upon by peers. Chosen problems will be converted into problem statements and run as competitions within the TopCoder community. Software developers, algorithmists, and mathematicians will compete with each other to create a winning solution, as measured by internal code quality, performance against benchmarks, and the ability to be integrated into NASA systems.”
- [NASA Innovation Pavilion](#) (with InnoCentive Inc.): InnoCentive organizes on-line challenges for NASA in which teams can work virtually to develop submissions. Responses to these challenges typically require only written responses, not physical demonstrations.

7) [Innovation Engineering Institute](#)

Tagline: The Scientific System for Growing a Culture of Never-Ending Innovation that Increases Innovation Speed (up to 6X) and Decreases Risk (30 to 80%)

Mission: Transform innovation from a random art into a reliable, scientific system for profitable growth

Legal Status: The Innovation Engineering Institute is a collaboration between the University of Maine's Foster Center for Student Innovation and the Eureka! Ranch.

Revenue: NA

Location: Orono, Maine and Cincinnati, Ohio

Founded: 2005

Activities:

- Education: “We use the Cycles to Mastery teaching methodology which consists of cycles of Digital, Lab, Application, Experience and Reflection classes designed to enable a mastery of understanding of the principles that enable a culture of never-ending innovation with increased speed and decreased risk. . . . Innovation Engineering is taught in a number of forms and formats.
 - Executive Program and Workshops give organizations an overview of Innovation Engineering.
 - Undergraduate and Graduate school programs teach students all 48 skills in the Body of Knowledge within a course set.
 - Innovation Engineering Green Belts learn 16 skills through an executive education format using the Cycles to Mastery approach.
 - Innovation Engineering Black Belts are certified in the complete 48-skill Body of Knowledge after digital learning, lab and experiences at Innovation College and practical application to real-world projects.”
- Expert Help: “A number of organizations are licensed to resell Innovation Engineering services. Each has an expertise in serving customers of a certain size or industry. You can also hire an Innovation Engineering College intern or Black Belt to help bring Innovation Engineering to your organization - from the inside out.”
- Blog: The Institute publishes innovationnews.com, “Practical & Proven Ideas for growing a culture of never ending innovation with increased speed and decreased risk”.

8) [Industrial Research Institute](#)

Tagline: Creating Innovation Leadership Solutions

Mission: Enhance the effectiveness of technological innovation by networking the world's best practitioners and thought leaders to seek, share, learn and create.

Legal Status: 501(c)6 Corporation

Revenue: \$3.4 million in 2011

Location: Arlington, Virginia

Founded: 1945

Ruling Year: 1946

History: "Fourteen companies comprised the original membership of the Institute when it was formed in 1938, under the auspices of the National Research Council (NRC) [the working arm of the National Academies of Science]. . . . The Institute was an integral part of the National Research Council until 1945, when it separated to become a non-profit membership corporation However, association with the Council continues unbroken. At the founding meeting, several speakers stressed the need for an association of research directors--something different from the usual technical society--and that the benefits to be derived would depend on the extent of cooperation by its members. The greatest advantage, they said, would come through personal contacts with members of the group--still a major characteristic of IRI."

Activities:

- Events: IRI regularly hosts meetings throughout the year to keep "you connected to the most relevant group of innovation professionals in research and technology." It also hosts week-long Shaping Innovation Leaders Program in concert with the Kellogg School of Management at Northwestern University "to meet the needs of demanding leadership roles in promising, mid-level managers in research, development and engineering."
- Collaboration Center: IRI facilitates "peer-to-peer transfer of knowledge and the research on best practices in technological innovation [through] . . . the IRI Networks and Research-on-Research (ROR) Working Groups."
- Library: IRI hosts an online library with "presentations, case studies, Research-Technology Management (RTM) journal articles, meeting summaries and more. . . ."

9) [TechConnect](#)

Mission: Bring together emerging technology providers with corporate and investment development partners.

Legal Status: for-profit corporation (with the same staff as the Nano Science and Technology Institute LLC)

Revenue: NA

Location: Austin, Texas and Cambridge, Massachusetts

Founded: 2006

Activities: TechConnect organizes [major national technology and innovation conferences](#) that brings [federal lab, university, and for-profit technology developers before potential investors](#) (including federal SBIR representatives). Annual conferences include:

- the [National Innovation Summit and Showcase](#) (“Accelerating Commercialization of American Innovation”), which includes “the Nation's top innovations emerging from our federal technology funding programs” and
- the [National SBIR Conference](#), at which firms can present to federal SBIR managers.

These conferences are co-located with the annual [TechConnect WORLD Summit and Innovation Showcase](#) (which includes separate sectors for nanotech, biotech, microtech, and cleantech). The joint events have over 4,000 attendees from 70 countries.

To present, technology developers must submit their technologies to the TechConnect Accelerator Committee for review and acceptance.¹⁰ [National Innovation Awards](#) are given to top submitted innovations with a federal funding history.

TechConnect also organizes conferences that bring together technology developers and investors on more focused topics such as [defense](#), [energy](#), and [island and isolated communities](#).

¹⁰ TechConnect indicates it is seeking to showcase “breakthrough technologies that are ready for licensing, corporate partnering, or investment opportunities. . . .” It “uses a community based peer-review process to identify and select top innovations to be presented to corporate and investment partners. This process provides for a very high quality vetting of technologies and allows the actual technology end-user a voice in selecting partnership and investment opportunities.”

10) [Technology Ventures Corporation](#)

Tagline: Helping entrepreneurs thrive

Mission: Commercialize federally funded technologies

Legal Status: 501(c)3 exempt private foundation

Revenue: \$3.9 million in 2011 (primary funders are Lockheed Martin and U.S. Department of Energy)

Location: Albuquerque, New Mexico

Founded: 1993

Ruling Year: 1996

History: “Technology Ventures Corporation was formed in 1993 as a nonprofit charitable foundation by Lockheed Martin Corporation as part of the management contract for Sandia National Laboratories. . . . TVC employs a successful commercialization model that connects innovators, entrepreneurs and investors nationwide to create companies and take federal laboratory inventions to the marketplace. Between 1993 and 2013, TVC figured prominently in the production of more than \$1.2 billion in venture capital investments, more than 120 new high-tech companies and more than 13,500 new jobs.”

Activities:

- [Innovation Summit](#): “TVC’s Innovation Summit targets entrepreneurs thinking about or in the process of starting or expanding a high-tech business. Information will be offered on business processes that entrepreneurs will need to understand before forming a business and seeking financing.”
- [Intellectual Property Workshops](#) on the basics of IP, patent application preparation, selecting patent agents and attorneys.
- The [SBIR Resource Center @ TVC](#) provides free quarterly SBIR proposal writing workshops, “individual mentoring relationships, in-depth proposal consultations, grants to help offset the costs to craft proposals, paid internship opportunities for technical university students and a monthly newsletter with the latest news and helpful hints.”
- [TVC Deal Stream Summit](#): “Entrepreneurs with technology-based businesses will seek investments from venture capitalists across the country—as a bonus, entrepreneurs will compete for a \$30,000 Investor’s Choice award that will be made to the entrepreneur presenting the best investment opportunity. This unique format has resulted in one in three entrepreneurs attracting equity investment.”

- [TechWhiteboard.com](#) “is a communication hub centered on DOE technology and intellectual property commercialization. The Tech Whiteboard provides an essential link between the available technologies, experts, scientists, entrepreneurs, investors, and businesses. The system's central "analytic engine" helps find connections and create real-world relationships.”
- [Innovation: America’s Journal of Technology Commercialization](#) “reports on new technologies, entrepreneurial activity, topics of interest to investors, activity at DOE and other national laboratories, and issues concerning technology transfer.”
- [Blog](#) with frequent articles on technology commercialization.

11) [The Cleantech Open](#)

Tagline: We find, fund, and foster the most promising cleantech startups on the planet

Mission: Find, fund, and foster big ideas that address today's most urgent energy, environmental, and economic challenges.

Legal Status: 501(c)3

Revenue: \$2.0 million in 2011

Location: Palo Alto, California

Founded: 2006

Ruling Year: 2010

History: "In 2006, a group of individuals saw a need to accelerate the creation of clean tech companies in California. As a result the group formed the California Cleantech Open Competition. The group quickly realized that this organization should be taken to the national level – 2009 marked the beginning of the National Cleantech Open Competition, which included 3 regions: California, Rocky Mountain, and the Pacific Northwest. Fast forward to 2014 – the competition is now referred to as the Cleantech Open Accelerator due to the programs it includes which serve to accelerate cleantech ideas to successful businesses and encompasses 8 regions."

Activities: The primary activity of the Cleantech Open is the [Cleantech Open Business Accelerator](#), an annual program to facilitate the development and growth of new clean technology businesses.

- Application criteria include being in pre-development or a small startup focused on any of eight technology categories.¹¹
- About one-third of applicants are accepted as participants (up to 170 teams). Participant teams are assigned a mentor; attend a training academy, webinars, and business clinics; and then present their proposal in one of eight regional

¹¹ An existing company must have less than \$1 million in external private funding (from angel investors, venture capitals or other third party sources of equity funding), less than \$5 million in all other sources of funding (grants, friends and family and personal investments) and at least one team member must be a US citizen or resident alien. Categories are energy generation, energy distribution & storage, energy efficiency, chemicals & advanced materials, information & communications technologies, green building, transportation, and agriculture, water & waste.

- competitions.¹² About one-fifth of participant teams (about 35) are chosen as finalists and automatically receive a prize.¹³
- Finalist teams go to the annual Global Forum to present and meet prospective investors. One team is selected as the national winner.¹⁴
 - “Since its inception in 2006, the Cleantech Open has awarded over \$6 million in cash and services to support cleantech growth companies. The 865 participating companies in the Cleantech Open’s accelerator programs have raised more than \$900 million in external capital.”

¹² Each team is to demonstrate that its technology and/or idea is feasible and that it can be made commercially available in the short-term regardless of whether or not a prototype currently exists. From the pool of teams that demonstrated a convincing case of feasibility, judges will choose the team “with the most innovative [sic] and with the highest economic and environmental/social impact as the winner for each category.”

¹³ Each regional finalist will receive a prize package worth \$20,000 in cash and services. Each region will also select a sustainability winner who will receive a further \$10,000 in cash and services. One national winner will receive a grand prize package worth up to \$200,000 in investment and additional services.

¹⁴ One national winner will receive a grand prize package worth up to \$200,000 in investment and additional services.

12) [iBridge Network](#)

Tagline: Linking Ideas and Innovation

Mission: The iBridge Network platform is managed by Omaha's Innovation Accelerator Foundation. It provides a centralized online source for research, early stage technologies and innovations. iBridge Network's objective is to drive transparency and access to university developed innovations that are available today as well as to field experts, ideas and information. Their innovations range the gamut from biological cell lines to animal models to computer technologies.

Legal Status: 501(c)(3)

Revenue:

Location: Omaha, Nebraska

Founded: 2005. Transferred to [Innovation Accelerator Foundation](#) in 2013.

Ruling Year:

Activities:

- Resources: The iBridge Network provides a public, centralized source for unbiased information about early stage technologies and inventions.
- Online tools: The iBridge Network provides tools to enhance user experience, including iBNewsFeed—personalized emails on topics and innovations and the ability to enter into licenses with research labs.

13) [Federal Laboratory Consortium for Technology Transfer](#)

Tagline: Advancing federal research and technology

Mission: The Federal Laboratory Consortium for Technology Transfer (FLC) is the nationwide network of federal laboratories that provides the forum to develop strategies and opportunities for linking laboratory mission technologies and expertise with the marketplace. Today, approximately 300 federal laboratories and centers and their parent departments and agencies are FLC members.

Legal Status: Created by statute. A quasi-governmental organization that makes an [annual report to](#) Congress.

Revenue: \$3,003,258 in 2011, from research and development budgets of fifteen federal agencies.

Location: Washington, DC. There are regional coordinators all over the country.

Founded: Organized in 1974, and officially chartered in 1986

Ruling Year: NA

Activities:

- Networking: The Consortium creates an environment that adds value to and supports the technology transfer efforts of its members and potential partners. The FLC develops and tests transfer methods, addresses barriers to the process, provides training, highlights grass-roots transfer efforts, and emphasizes national initiatives where technology transfer has a role. For the public and private sectors, the FLC brings laboratories together with potential users of government-developed technologies. This is in part accomplished by the FLC's Technology Locator network and regional and national meetings.

14) [Association of University Technology Managers](#)

Tagline: Advancing Discoveries for a Better World

Mission: The core purpose of AUTM is to support and advance academic technology transfer globally. Technology transfer is transferring scientific findings from one organization to another for the purpose of further development and commercialization. AUTM is a network of more than 3,200 technology transfer professionals who work in academic, research, government, legal and commercial settings.

Legal Status: 501(c)(3) corporation

Revenue: \$3,287,217 in 2011

Location: Deerfield, IL 60015

Founded: 1974

Ruling Year: 1979

Activities:

- Advocacy: AUTM educates and communicates with public officials - rather than lobbying according to the wishes of any segment of the overall AUTM membership - and seeks to keep members informed about issues and legislative activity so individuals may respond in a way appropriate to their particular circumstances.
- Training and Resources: AUTM provides trainings and resources to its members through in-person and online courses. It also performs surveys of the field on compensation and licensing to provide information to members.
- A Better World Database: The Better World Project Database is a database of professionally written stories about how technology transfer makes the world a better place. The database allows all AUTM members to share their stories and generate content that is specific to their needs.
- Networking: AUTM hosts an annual meeting, provides an online member database and other networking forums.

15) [Alliance of Technology Transfer Professionals](#)

Tagline: Successfully moving technology from research to the marketplace by unifying and educating technology transfer professionals around the world.

Mission: To unify and educate technology transfer professionals around the world to successfully move technology from research to the marketplace. ATTP was established to recognize and promote individuals with these core competencies and to provide approved training for individuals wishing to acquire these skills and become a Registered Technology Transfer Professional (RTTP).

Legal Status: ATTP is a nonprofit organization limited by guarantee in Scotland.

Partners: ATTP partners include the major technology transfer organizations around the globe, including from the U.S. (AUTM), Europe, Australasia, United Kingdom, Sweden, and Germany.

Revenue: NA

Location:

Founded: 2009

Ruling Year: NA

Activities:

- Recognition: ATTP was founded to provide a gold standard of professional achievement. Professionals will register with ATTP to indicate their status as a technology transfer expert.
- Professional development: ATTP provides access to training and other professional development.

16) [Licensing Executives Society](#)

Mission: LES is an independent, professional organization that facilitates global intellectual property (IP) commerce through education, networking, standards development and certification.

Legal Status: 501(c)(6)

Revenue: \$5,019,540 in 2011

Location: Alexandria, Virginia

Founded: 1965

Ruling Year: 1968

Activities:

- Networking: Connect IP professionals through publications, events, a membership directory and a growing network of local chapters.
- Training and professional development resources: Provide IP professionals with training and professional development through webinars, in-person trainings and conference calls. Bi-annual surveys on compensation, deal terms and royalty rates to provide industry information to members.

17) [National Business Incubation Association](#)

Tagline: Your source for knowledge and networks in business incubation

Mission: Advance the business creation process to increase entrepreneurial success and individual opportunity, strengthening communities worldwide.

Legal Status: 501(c)3 association

Revenue: \$1.5 million in 2012

Location: Athens, Ohio

Membership: “NBIA serves more than 1,900 members in over 60 nations. . . . Approximately 25 percent of the NBIA membership is from outside the United States.”

Founded: 1985

Ruling Year: 1996

History: “In 1980, approximately 12 business incubators were operating in the United States – all of them in the industrial Northeast, which had been hard-hit by plant closures in the previous decade. Throughout the 1980s, business incubation industry growth was swift, as a few farsighted individuals saw the limitations of common economic development strategies that focused solely on industry attraction and large corporate expansions. . . . [B]usiness incubation leaders formed the National Business Incubation Association (NBIA) in 1985 to provide training and tools for assisting start-up and fledgling firms and to serve as a clearinghouse for information on incubator management and development issues.”

Activities:

- Events: NBIA annually hosts an international conference on business incubation, a training institute, and a summit for advanced incubation professionals.
- Training: NBIA offers [webinars](#) and [customized training](#).
- Resources: The NBIA library includes resources geared toward training, news, tools and resources to advocate for the industry, best practices, measuring economic impacts, how to weather recessions, and many more useful resources for incubators.

18) [Technology Councils of North America](#)

Mission: Provide regional technology associations with a significantly expanded network of industry knowledge, connections and expertise in public/government/media relations.

Legal Status: NA

Revenue: NA

Membership: Over 40 [regional technology organizations](#) that represent more than 16,000 North American technology-related companies.

Location: Downers Grove, Illinois

Founded: NA

Activities:

- [Events](#): Annually hosts a summer conference, a “DC fly-in,” and a CEO retreat.
- [National Survey](#): TECNA conducts an annual national survey of technology, policy and strategic issues focused on issues critical to the tech industry.
- [Public Policy](#): Assists members in effecting “local, state, and provincial policies that encourage Technology Based Economic Development” through a national public policy committee, a legislative action center, and [TechVoice](#), an online advocacy website co-hosted with the Computing Technology Industry Association (CompTIA).

19) [Association of Technology Commercialization](#)

Legal Status: not yet active

Location: Austin, TX

IV. Inventor Recognition

1) [National Academy of Inventors](#)

Tagline: Honoring academic invention

Mission: Recognize and encourage inventors, enhance the visibility of university and nonprofit research institute technology and innovation, encourage the disclosure of intellectual property, educate and mentor innovative students, and translate the inventions of its members to benefit society.

Legal Status: 501(c)3

Membership: Over 200 U.S. and international universities and governmental and non-profit research institutions, with over 3,000 individual inventor members and Fellows.

Revenue: \$139,000 in 2012

Location: Tampa, Florida (at University of South Florida)

Founded: 2010

Ruling Year: 2010

Activities:

- Awards: Honors academic inventors as [Fellows](#). In 2013, the first class of 101 Fellows from 56 institutions was inducted.
- Conference: Holds [annual conference](#) (2014 at U.S. Patent and Trademark Office). Conference aim is to “be an arena where innovation and entrepreneurship leading to local and national economic development is recognized, honored and cultivated in the academic world.”
- Journal: Publishes [Technology and Innovation](#) journal, “a forum for presenting information encompassing essentially the entire field of applied sciences with a focus on transformative technology and academic innovation.”

2) [National Inventors Hall of Fame](#)

Mission: To promote the importance of inventors and invention by honoring the individuals who conceived, patented, and advanced U.S. technological achievements.

Legal Status: 501(c)3 corporation

Revenue: \$139,000 in 2012

Location: Arlington, Virginia on the campus of the U.S. Patent and Trademark Office; managed by Invent Now, in North Canton, Ohio (south of Akron)

Founded: 1973

Ruling Year: 2010

Activities:

- Awards: “[T]he National Inventors Hall of Fame maintains an annual tradition of selecting Inductees through a process that accepts nominations from all sources and relies on a panel of experts in the fields of science, technology, engineering, and patents to screen, vet, and make final selections. The criteria for Induction into the Hall of Fame requires candidates to hold a United States Patent that has contributed significantly to the nation's welfare and the advancement of science and useful arts.”

3) [National Science & Technology Medals Foundation](#)

Mission: Enhance the prominence of the National Medals of Science and of Technology and Innovation and their laureates; inspire the leaders of tomorrow to pursue excellence in science and engineering by promoting the National Medal laureates as role models for future generations; increase public awareness that economic strength, competitiveness, and high standard of living depend on our nation's ability to lead the world in scientific discovery and technological development.

Legal Status: 501(c)3 corporation

Revenue: \$368,000 in 2011

Location: Washington, DC

Founded: 1990

Ruling Year: 1991

Activities:

- Awards: Hosts [events](#) around awards of the National Medals of Science and of Technology and Innovation, which are awarded by the president.
- Museum: Will host the [Laureate e-Museum](#), a searchable database of information on all of the Medal laureates.

4) [Christopher Columbus Fellowship Foundation](#)

Mission: Encourage and support research, study, and labor designed to produce new discoveries in all fields of endeavor for the benefit of mankind.

Legal Status: Federal agency

Revenue: under \$1 million annually, from congressional appropriations and donations

Location: Auburn, New York

Founded: 1992

History: In 1992, Congress passed Public Law 102-281 creating the Christopher Columbus Quincentenary Coins and Fellowship Foundation. The initial funding for the Foundation came from the sale of three denominations of specially minted coins sold by the United States Mint from August 1992-June 1993. Congress has provided an annual appropriation since. [Several congressional and Administration efforts](#) to eliminate the organization have failed.

Activities: The Foundation operates a series of annual scientific awards competitions for adults and students. Those for adults are described below:

- [Christopher Columbus Foundation-U.S. Chamber of Commerce Life Sciences Awards](#): \$10,000 Chairmen's Distinguished Life Sciences Award to "an adult scientist who is making or has recently made a significant and positive contribution related to developing a 'cutting edge' innovation in the field of life sciences."
- [Agriscience Awards](#): \$10,000 Distinguished Agriscience Scientist Award to "a scientist who is making or has recently made significant and positive contributions in the field of agriscience."

V. Intellectual Property

1) Intellectual Property Owners Association

Tagline: Serving the Global Intellectual Property Community

Mission: Intellectual Property Owners Association (IPO) serves as a trade association for owners of patents, trademarks, copyrights, and trade secrets to increase public awareness and understanding of the social and economic value of intellectual property (IP).

Legal Status: 501(c)6 corporation

Revenue: \$4.4 million in 2012

Location: Washington, DC

Founded: 1972

Ruling Year: 1973

Activities:

- Advocacy: IPO advocates for “cost effective and reliable patent, trademark, copyright, and trade secret protection and urges laws to provide reasonable certainty and undue litigation.” The Advocacy activities include a range of issues including working to reform U.S. patent and trademark laws, ending the divestment of user fee collections from the USPTO, and working to stop counterfeiting and pirating world-wide.
- Events: Professional development and networking events are held, at least, annually to discuss IP- related business issue developments and trends. These events include both webinars and in-person conferences and meetings.
- Publications: The publication section provides daily news on IP issues in the United States, maintains a list of top patent owners dating back to 1984, the IP record which combines statistics and other IP information, and the IPO law journal which provides a scholarly foundation on a range of topics related to intellectual property.

2) [Intellectual Property Owners Educational Foundation](#)

Tagline: Promoting Intellectual Property Education and Awareness

Mission: Broaden understanding of systems for the development and protection of intellectual property

Legal Status: 501(c)3

Revenue: \$0.9 million in 2011

Location: Washington, DC

Founded: 1989

Ruling Year: 2004

Activities:

- PTO Day: This [annual conference](#) is geared toward US Patent and Trademark Law and Practice.
- Awards and Recognition: The IPO Educational Foundation recognizes a [yearly innovator](#) who has made a significant impact on national economies or quality of life and a [distinguished IP professional](#) who has dedicated a lifetime to invention and innovation.
- IP Video Contest: This video contest awards individuals in various age groups (13-15 years old, 16-18 years old, and 19 and over) who submit an original video on a topic of importance to the patent system, especially as it relates to creating jobs and spurring innovation.

3) [National Association of Patent Practitioners](#)

Mission: Foster professionalism in the patent practitioner community and to aid patent agents and patent attorneys in staying current in matters relating to practice before the USPTO.

Legal Status: 501(c)6 Corporation

Revenue: 105,653 in 2012

Location: VA

Founded: 1996

Ruling Year: 1997

Activities:

- Events: The National Association of Patent Practitioners (NAPP) hosts an [annual meeting](#) and conference. Additional one-day short courses have been offered to those with 0-2 years of experience as a patent practitioner.

4) [American Intellectual Property Law Association](#)

Tagline: AIPLA will expand its role as an innovator, powerful advocate, and visible global leader in intellectual property through our commitment to education, outreach, member service, and advocacy.

Mission: The mission is to serve their members by increasing standards of professionalization, to serve public policy leaders by assisting them with objective and unbiased analysis for fair and effective global laws, to serve the public by educating them on intellectual property issues, and to serve the association and its employees by providing sound management for a fiscally stable and vibrant workplace.

Legal Status: 501(c)6 Corporation

Revenue: \$7.2 million in 2011

Location: Arlington, VA

Founded: 1897

Ruling Year: 1950

Activities:

- IP Policy and Advocacy: AIPLA is engaged in [advocating](#) on behalf of its members before Congress and the courts as well as with the USPTO and other domestic and international organizations. To their members, they provide legislation trackers, Amicus briefs, testimony, and a series of other reports.
- Learning Center/Meetings: The [learning center/meetings](#) provides this intellectual property bar association with a clearinghouse of learning opportunities through webinars, online libraries, e-classrooms, as well as in-person meetings and seminars.
- Professional Resources: The AIPLA provides [professional resources](#) including best practice resources, alternative dispute resolution materials and forms, as well as resources for students and [programs and awards](#) for its members.

5) [International Intellectual Property Institute](#)

Tagline: Promoting job creation and competitiveness through innovation and creativity

Mission: Their site calls attention to providing *vision* (knowing how to build constituencies to achieve results in the international IP landscape), *value* (receiving services from top professionals at a fraction of the cost), and *voice* (one of few independent IP organizations able to articulate the IP system impact on economic growth).

Legal Status: 501(c)3 Corporation

Revenue: \$1.3 million in 2011

Location: Washington, DC

Founded: 1998

Ruling Year: 2002

Activities:

- Seminars: IPI joins with others, like Bloomberg BNA, to host [seminars](#) on current topics like Obama's American Invests Act.
- Research: IPI also conducts [studies](#) on the impact of IP related issues. A particular focus has been on the economic growth impacts of IP related issues.
- Innovation Opportunities: IPI has been engaged in a joint collaboration to [train](#) Philippine Universities on the knowledge and tools necessary to engage in successful technology transfer. The goal of the project is to promote job creation and wealth in the Philippines by helping the country to patent and commercialize its research.
- Consulting and Training Services: The GSA has approved IPI as a Mission Oriented Business Integrated Service (MOBIS) with the capacity to engage in [consulting and training services](#).

VI. Invention and Innovation Policy

1) [The Alliance for Science and Technology Research in America](#)

Tagline: The human face of science research: jobs, our standards of living, national security and innovation...

Mission: With a collection of over 130 companies, academic institutions, professional societies, trade associations, and foundations, ASTRA aims to ensure that there is an adequate, and growing, investment by the Federal government in basic research in the physical sciences, the mathematical and computational sciences, and engineering.

Legal Status: 501(c)3 Corporation

Revenue: \$256,145 in 2011

Location: Washington, DC

Founded: 2001

Ruling Year: 2002

Activities:

- Astra Tool Kit:
 - One component of the tool kit is that ASTRA develops several research products aimed at the role that Federal science funding leads to job creation and raises the standard of living in America. Notable among these efforts is their [State Innovation Vital Signs Reports](#)- which detail the impact of this funding for every state and DC.
- Hot Issues: ASTRA releases summaries of legislation and policy briefs; however, much of this information is now dated. Most of the [Hot Issue](#) links end in 2011.

2) [Board on Science, Technology, and Economic Policy](#), National Academies of Science

Tagline: Twenty years of contributions to the nation's innovation and competitiveness

Mission: The mandate of the Board on Science, Technology, and Economic Policy (STEP) is to advise federal, state, and local governments and inform the public about economic and related public policies to promote the creation, diffusion, and application of new scientific and technical knowledge to enhance the productivity and competitiveness of the U.S. economy and foster economic prosperity for all Americans.

Legal Status: 501(c)3 Corporation

Revenue: \$359 million in 2011 (All of NAS)

Location: Washington, DC

Founded: 1863

Ruling Year: 1925 (NAS)

Activities:

- 21 Century Manufacturing: This is a [report](#) dedicated to understand the operation, achievements and challenges of the Manufacturing Extension Partnership (MEP) program at NIST.
- Best Practices in National Innovation Programs: This [committee](#) is in charge of comparing selected innovation programs in the domestic and foreign arena with a focus on flexible electronic technologies.
- Capitalizing on Science, Technology, and Innovation: This [project](#) is geared toward updating Phase I of the National Research Council's review of the Small Business Innovation Research (SBIR) program.
- Competing in the 21st Century: This [study](#), with planned follow-up meetings and symposia, examines state and regional programs in a knowledge-based economy to identify best practices so as to capitalize on federal and state investments.
- Determinants of Market Adoption of Advanced Energy Efficiency and Clean Energy Technologies: A [consensus study](#) to determine how "federal policies can accelerate the market adoption of advanced energy efficiency and low- or non-polluting energy technologies."
- International Comparative Study of High-Skilled Immigration Policy and the Global Competition for Talent: This [conference](#) is meant to determine the effects of changes in countries treatments of temporary and permanent immigrants with advanced training and skills, especially in STEM fields, on entry and retention in the labor market.

- The Innovation Policy Forum: This [forum](#) brings together representatives of government, industry, national laboratories, research institutes and universities, from the United States and around the world, to discuss issues related to US innovation policy.
- The Supply Chain for Middle-Skill Jobs: A national [symposium](#) will address how well American programs are in place to foster technically oriented jobs that do not require a baccalaureate or higher degree.

3) [The Information Technology & Innovation Foundation](#)

Tagline: Smart Ideas for the Innovation Economy

Mission: Our mission is to help policymakers around the world better understand the nature of the new innovation economy and the types of public policies needed to drive innovation, productivity and broad-based prosperity.

Legal Status: 501(c)3 Corporation

Revenue: \$3.4 million in 2012 (All of NAS)

Location: Washington, DC

Founded: 2006

Ruling Year: 2007

Activities:

- [Innovation Fact of the week](#)- Weekly fact provided on innovation
- [Policymaker's Toolbox](#)- Provides policymakers with actionable ideas
- [Innovation Files](#)- Blog format to provide education on innovation-based issues
- [Center for Data Innovation](#)- This group has its own staff and provide independent research and educational activities including data innovation day.

